REMARKS

Claims 5-7, 10-16, 25-26, and 30-44 are pending. Claims 5-7, 10-16, and 25-26 are allowed. Claims 30-44 were withdrawn by the Examiner.

Applicants thank the Examiner for indicating the allowability of claims 5-7, 10-16, and 25-26, including for the rejoinder and allowance of previously withdrawn dependent claims 15-16.

In the current Office Action, the Examiner has withdrawn claims 30-44, which were newly added in the Amendment filed with the Request for Continued Examination on November 13, 2009, for allegedly being directed to a species that was not elected in response to the Restriction Requirement dated July 3, 2008. Applicants respectfully traverse the withdrawal of claims 30-44, and request that these claims be reinstated and examined, for at least the reasons set forth below.

In Applicants' Response to the Species Election Requirement filed on August 4, 2008, Species I, corresponding to Figures 2 and 3, was elected. Figure 2 shows an embodiment of a video encoder that includes a discrete cosine transformation (DCT) mode decision module 402, a weighted forward DCT (FDCT) module 401, a segment memory 403, a predictor module 406, a selector module 405, a quantization module 404, and a variable length encoding module 407. (*See* Specification, 5:14 and 9:25-10:1). Figure 3 shows an embodiment of the predictor module 406 based on block spatial activity. (*See* Specification, 5:15-16 and 10:16-19:10).

Applicants respectfully submit that the withdrawn claims 30-44 read on Figures 2 and 3 of the elected Species I, and thus have been improperly withdrawn.

In particular, independent claim 30 recites similar subject matter as currently allowed independent claim 25. Furthermore, independent claim 30 is directed to a "video encoding module" that reads on the video encoder of Figure 2. Claim 30 is reproduced below with indications to at least some of the corresponding elements found in the Figures 2 and/or 3 of Species I indicated in parentheses, as follows:

> a memory configured to store a relationship between metric values generated from reference video data using a metric function and respective first encoding parameters, and quantities of encoded video data generated by encoding the reference video data using the respective first encoding parameters, the

relationship determined during a calibration process; (*e.g.*, Figure 2, predictor module 406; *see, also*, Specification 17:11-12 discussing memory of predictor 406)

a predictor module configured to use the metric function to generate metric values from input video data and respective second encoding parameters; (*e.g.*, Figures 2 and 3, predictor module 406) and

a selector module configure to select at least one of the second encoding parameters on the basis of a desired quantity of encoded video data and the relationship, (*e.g.*, Figure 2, selector module 405)

wherein the metric function is a spatial activity metric function based on a sum of weighted AC discrete cosine transformation coefficients and is of the form, $\sum_{u,v} \frac{|f(u,v)|}{w(u,v)q(u,v)}$, where $f(u,v)$ is a discrete cosine transformation coefficient of a block element with coordinates (u, v), $w(u,v)$ is a weight for the coefficient, and $q(u,v)$ is a quantization parameter for the coefficient, (*e.g.*, Figures 2 and 3, predictor module 406; *see generally* Specification 10:16-19:10) and

wherein the video encoding module further includes at least one of a dedicated hardware circuit configured to implement the predictor module, and a processor configured to execute the predictor module. (*e.g.*, Figure 2, predictor module 406; *see also* Specification 10:27-30)

Thus, independent claim 30 reads on Species I.

Independent claim 32 recites similar subject matter as currently allowed independent claim 26. Furthermore, independent claim 32 is directed to a "video encoding module" that reads on the video encoder of Figure 2. Claim 32 is reproduced below with indications to at least some of the corresponding elements found in the Figures 2 and/or 3 of Species I indicated in parentheses, as follows:

a memory configured to store a relationship between metric values generated from reference video data using a metric function and respective first encoding parameters, and quantities of encoded video data generated by encoding the reference video data using the respective first encoding parameters, the relationship determined during a calibration process; (*e.g.*, Figure 2, predictor module 406; *see, also*, Specification 17:11-12 discussing memory of predictor 406)

a predictor module configured to use the metric function to generate metric values from input video data and respective second encoding parameters; (*e.g.*, Figures 2 and 3, predictor module 406) and

a selector module configure to select at least one of the second encoding parameters on the basis of a desired quantity of encoded video data and the relationship, (*e.g.*, Figure 2, selector module 405)

wherein the metric function is a spatial activity metric function based on a sum of weighted AC discrete cosine transformation coefficients and is of the form, $\sum_{u,v} \frac{|f(u,v)*h(u,v)|}{w(u,v)q(u,v)}$, where $f(u,v)$ is a discrete cosine transformation coefficient of a block element with coordinates (u, v), $w(u,v)$ is a weight for the coefficient, $q(u,v)$ is a quantization parameter for the coefficient, and $h(u,v)$ is a spatial weighting factor for the coefficient, (*e.g.*, Figures 2 and 3, predictor module 406; *see generally* Specification 10:16-19:10) and

wherein the video encoding module further includes at least one of a dedicated hardware circuit configured to implement the predictor module, and a processor configured to execute the predictor module. (*e.g.*, Figure 2, predictor module 406; *see also* Specification 10:27-30)

Thus, independent claim 32 reads on Species I.

Independent claim 34 is directed to a method that reads on Figures 2 and 3 of Species I. In particular, claim 34 is reproduced below with indications to at least some of the corresponding elements found in the Figures 2 and/or 3 of Species I indicated in parentheses, as follows:

determining a relationship between first metric values and respective quantities of encoded video data, the first metric values generated by encoding reference video data from a reference video using a metric function and respective first encoding parameters; (*e.g.*, Figures 2 and 3, predictor module 406; *see generally* Specification 10:16-19:10)

after determining the relationship, under control of a video encoder that is at least one of a configured hardware circuit and a programmed computer (*e.g.*, the video encoder shown in Figure 2; *see also* Specification 10:27-30):

receiving an input video distinct from the reference video; (*e.g.*, Figure 2, segment memory module 403)

generating second metric values from input video data of the input video using respective second encoding parameters; (*e.g.*, Figures 2 and 3, predictor module 406; *see generally* Specification 10:16-19:10)

selecting at least one of the second encoding parameters based on a desired quantity of encoded video data and the relationship between the first metric values and the respective quantities of encoded video data; (*e.g.*, Figure 2, selector module 405) and

> encoding the input video data using the selected at least one encoding parameter. (*e.g.*, Figure 2, variable length coding module 407)

Thus, independent claim 34 reads on Species I.

Independent claim 42 is directed to a "video encoding module" that reads on the video encoder of Figure 2. Claim 42 is reproduced below with indications to at least some of the corresponding elements found in the Figures 2 and/or 3 of Species I indicated in parentheses, as follows:

> a memory configured to store a predetermined relationship between first metric values and respective quantities of encoded video data, the predetermined relationship being determined during a calibration process and based at least in part on generating the first metric values from reference video data of a reference video using a metric function and respective first encoding parameters, and generating the respective quantities by encoding the reference video data using the respective first encoding parameters; (*e.g.*, Figures 2 and 3, predictor module 406; *see generally* Specification 10:16-19:10; and *see, also*, Specification 17:11-12 discussing memory of predictor 406)
>
> a predictor module configured to receive input video data from an input video, the input video distinct from the reference video, and to generate second metric values from the input video data using the metric function and respective second encoding parameters; (*e.g.*, Figures 2 and 3, predictor module 406; *see generally* Specification 10:16-19:10) and
>
> a selector module configured to select at least one of the second encoding parameters based on a desired quantity of encoded video data and the stored predetermined relationship, (*e.g.*, Figure 2, selector module 405)
>
> wherein the video encoding module further includes at least one of a dedicated hardware circuit configured to implement the predictor module, and a processor configured to execute the predictor module. (*e.g.*, Specification 10:27-30)

Thus, independent claim 42 reads on Species I.

In a similar manner, the various withdrawn dependent claims 31, 33, 35-41 and 43-44 also read on Figures 2 and/or 3 of Species I.

Thus, for at least all the foregoing reasons, Applicants respectfully submit that claims 30-44 have been improperly withdrawn, and request that claims 30-44 be reinstated and examined.

Furthermore, as is discussed in detail in the Amendment filed November 13, 2009, Applicants respectfully submit that each of the claims 30-44 is allowable over the prior art, and thus Applicants earnestly solicit favorable consideration and a Notice of Allowance with respect to claims 30-44, in addition to previously allowed claims 5-7, 10-16, and 25-26.

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

Respectfully submitted,

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